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ABSTRACT

Designed to assess the relationship of various state policies for postsecondary education to graduate and professional education, this report identifies principal financing issues for use in advising state policy-makers. An introductory section describes the background and approach of the study, findings and conclusions, recommendations (including the rationale and impact of each), and the background of graduate and professional education. Chapter II describes the nature of graduate and professional education and its costs. Chapter III analyzes the state's financial support for advanced study in Minnesota through the financing of institutions, programs and students. Chapter IV provides background on topics which provide perspective on financing graduate and professional education in Minnesota. Major developments shaping advanced study nationally are outlined in Chapter V. Conclusions about the appropriateness of state financing policies are presented in Chapter VI. Five tables provide data on funding, institutions, enrollments and degrees. The Board recommendations include continued unrestricted financing of systems; funding of graduate fellowships at the University of Minnesota; exploration of more creative ways to assist graduate and professional students in financing their education; and exploration for the establishment of guidelines for program outcomes. (KM)

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THE FINANCING OF GRADUATE AND PROFESSIONAL EDUCATION IN MINNESOTA

With

Coordinating Board Recommendations

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THE FINANCING OF GRADUATE AND PROFESSIONAL EDUCATION IN MINNESOTA

With

Coordinating Board Recommendations

Minnesota Higher Education Coordinating Board

February 19, 1987

DATE: FEBRUARY 19, 1987 AND APRIL 16, 1987

SUBJECT: THE FINANCING OF GRADUATE AND PROFESSIONAL EDUCATION IN MINNESOTA

ACTION: THE HIGHER EDUCATION COORDINATING BOARD RECOMMENDED THAT:

1. The legislature continue the general, unrestricted financing of systems as the basic means of supporting graduate and professional education in Minnesota's public institutions of higher education.

2. In cases when institutions propose termination of graduate and professional programs or seek special funding for them, the Higher Education Coordinating Board examine need for those programs and determine the suitable response to address that need.

3. The legislature approve the University of Minnesota's request for funds to provide graduate fellowships.

4. The staff immediately begin working with the University of Minnesota to explore assistance for students in the health professions in financing their education, and that such exploration focus on targeted grant programs.

5. The Higher Education Coordinating Board explore more creative ways to assist graduate and professional students in financing their education.

6. The post-secondary community explore further issues emerging from this study related to the quantity of graduate and professional education in Minnesota.

7. The Higher Education Coordinating Board, in concert with the post-secondary education community, explore the establishment of guidelines for outcomes of graduate and professional education programs in Minnesota.

OVERVIEW OF COORDINATING BOARD RECOMMENDATIONS

Background and Rationale

In 1984, the Higher Education Coordinating Board included in its Management Plan an initiative to assess the relationship of various state policies for post-secondary education to graduate and professional education. The staff report, The Financing of Graduate and Professional Education in Minnesota, identifies principal financing issues for the Board's advice to state policy makers. A separate technical paper provides expanded information on the topics discussed in this policy paper.

The study explores state financing policies by posing three questions.

- o What methods does state government employ to support advanced study?
- o How appropriate are these methods of support for fulfilling the state's interests?
- o Could alternative methods be more effective in pursuit of the state's interests?

The study does not indicate how much the state should spend or what specific programs or areas of advanced study should receive financial support. Results of the study, however, may help determine the appropriate state role and methods of financing particular types of programs to meet the state's objectives.

APPROACH

Five purposes of graduate and professional education are preparation of knowledge producers, production of knowledge, preparation of first professionals, preparation of graduate professionals, and provi-

sion of continuing education. Each purpose has unique characteristics and circumstances that make a uniform approach to advanced education both difficult and undesirable.

Selecting the appropriate method of support for advanced study also is important. Three broad concepts explored are:

- o General, unrestricted financing of institutions that offer graduate or professional education.
- o Financing of specific programs, projects, or activities that are related to advanced study.
- o Financing of students who undertake advanced study.

These approaches are not mutually exclusive. However, the implications of each differ. Providing general support for institutions leaves discretion over specific programs and level of funding for them largely to institutions. Financing of specific programs allows for greater initiatives by the financing source in setting institutional priorities and resource allocations. Financing of students rather than institutions or programs focuses responsibility for educational choices on students and their sources of support.

Sound financing policy involves using the most appropriate method or methods to address a specific purpose of advanced study. Appropriateness depends on the nature of a particular objective and circumstances. This study assesses the applicability of the various financing methods to the challenges facing diverse elements of graduate and professional education in Minnesota.

FINDINGS

State government in Minnesota finances graduate and professional study through unrestricted funding of institutions, restricted funding of specific programs, and assistance for students. Funding of public

collegiate systems is based largely on enrollments and costs by level of instruction. The state appropriates funds to cover two-thirds of instructional costs and expects systems to raise the remaining one-third through tuition revenue. Governing boards have the authority to allocate state funds and to set specific tuition rates within systems. The state addresses demand for specific instructional programs and research through special appropriations and contracting arrangements. State support for graduate and professional students is virtually limited to authorized loans to help cover costs of attendance, of which tuition is a small proportion. The University of Minnesota, however, does use general appropriations for fellowships.

Graduate and professional education in Minnesota date back to at least 1880. The University of Minnesota has been the leading provider of advanced instruction in the state, though the State University System and the state's private colleges and professional schools have expanded their offerings in recent decades. Advanced study and related research have contributed to the state's economic vitality and to provision of professional services to its residents. Currently, 25 institutions in Minnesota offer advanced instruction in 607 degree programs. Nearly 25,000 students, nine percent of the state's post-secondary enrollment, pursue graduate and professional study. While over 70 percent of students in master's and first professional programs are Minnesota residents, over 50 percent of students pursuing academic doctorates are nonresidents. This reflects the greater mobility among doctoral students than among other graduate and professional students. Minnesota's share of advanced degrees conferred is disproportionately low compared to its share of the population: 1.8 percent of the

national population but 1.2 percent of master's degrees, 1.5 percent of doctoral degrees, and 2.2 percent of first professional degrees in 1982-83.

Graduate and professional education in America, as known today, emerged in the late 1800s and early 1900s with roots in research, undergraduate education, and public service. Students, business, and federal and state governments share the benefits from advanced study. They also share responsibility for financing it.

Market conditions affect demand for instruction, expertise, and knowledge generated by advanced study. Unfavorable conditions have deterred individuals from pursing the Ph.D. in many fields even though demand for Ph.D.s may increase during the 1990s and demand for the knowledge they produce exists today. In first professional fields, particularly in the health sciences, projected surpluses of practitioners might deter talented individuals from pursuing studies. The time and costs involved in establishing programs and preparing students in many areas of advanced study make swift response to changing market conditions difficult.

USIONS

The study led to the following conclusions.

General Financing Issues

- Separate, non-enrollment driven funding for graduate and professional education could be more stable than the general, system-wide approach now employed, but it would intrude into governing board autonomy and would pose academic, staffing, and budgetary difficulties.

- o Reducing the state's tuition expectations from graduate and professional instruction could reduce the financial burden on students, but it would encroach on governing board authority to set tuition without making a great reduction in students' total costs of attendance.

- o Expanded use of restricted program funding could promote activities desired by the state, but it would intrude into institutional autonomy and would risk misdirected or unstable support.

- o State-funded, merit-based fellowships and other grants could be an incentive to pursue advanced education despite unfavorable, short-term market conditions for prospective students.

- o State-funded, need-based grants could increase financial access for students, but they would be difficult to administer and would not be targeted to the most talented students.

- o Creative financing methods sponsored by the state could help students overcome risks involved in pursuing advanced studies.

Specific Financing Issues

- o To be nationally competitive for highly talented students in Ph.D. programs, Minnesota institutions not only need to offer outstanding programs but also might have to offer financial incentives.

- o Projected surpluses of practitioners in some first professional fields could lead to declining enrollments, which might make special support from the state desirable to sustain the quality of programs.

Nonfinancing Issues

- o Reassessment of institutional roles in providing graduate and professional education in Minnesota might be necessary as circumstances change.

- o The state's role in contributing Minnesota's "fair share" nationally to graduate and professional education deserves attention.

- o The apparent imbalance between Minnesota's share of national population and advanced degrees conferred deserves attention.

RECOMMENDATIONS:

Based on the findings and conclusions of the study, the Board adopted the following recommendations:

1. **That the legislature continue the general, unrestricted financing of systems as the basic means of supporting graduate and professional education in Minnesota's public institutions of higher education.**

   Rationale: General financing for all levels of instruction combined is advantageous for two reasons. First, institutions and their governing boards have the autonomy to allocate funds in response to changing demand for instruction and other services. Erosion of autonomy through the dedication and restriction of funds to particular endeavors such as graduate and professional instruction could limit institutional responsiveness to changing conditions. Second, unrestricted general support enables institutions to maintain the integration of the educational enterprise. Although graduate and professional education are distinct from undergraduate education, separation is difficult for both academic and budgetary purposes. Moreover, individual programs may be less vulnerable to cuts in unrestricted institutional financing than in dedicated program financing. Reduced vulnerability allows flexibility for institutions to build and sustain quality of programs in the long-term.

   Impact: Reliance on unrestricted systemwide financing methods for supporting graduate and professional education would continue.

2. **That in cases when institutions propose termination of graduate and professional programs or seek special funding for them, the Higher Education Coordinating Board examine need for those programs and determine the suitable response to address that need.**

Rationale: Unrestricted financing of institutions is the preferred approach to supporting advanced study. Circumstances, however, may

arise where special, dedicated funding is desirable despite the obvious intrusion by the state into institutional decisions and operations. Options for special funding include special appropriations and contracting.

The health sciences provide examples of instances when state intervention might be appropriate. National projections indicate that surpluses of practitioners in fields such as dentistry, medicine, and veterinary medicine could occur within the coming decade. Uncertain prospects for establishing practices could deter many qualified persons from entering these fields. A shortage of qualified applicants in professional or graduate programs could result in enrollments that are too low to maintain current levels of resources from enrollment-related funds.

Without special funding, three alternatives for institutions with programs in difficulty would be to sustain the programs with funds siphoned from other units, to adjust admission standards in programs in order to maintain enrollments, and to terminate the programs. The first alternative could threaten the overall quality of an institution. The second could threaten the quality of the particular programs in question. The third could deprive the state of an educational resource.

By providing special funding, the state could relieve an institution's burden of sustaining a program while insuring the continuation of that program. The state could provide funds for a certain level of enrollment even if actual enrollments were lower. Admission standards would not have to be adjusted, and funds from other units would be protected. Because first professional programs tend to be academically

and administratively distinct from graduate and undergraduate programs, dedicating funds to them might be easier than to others.

In cases when study in a field is desirable but financial support for an entire program is not feasible, the state could contract directly with educational institutions within or outside Minnesota to provide instruction for certain students. Contracting would allow flexibility in responding to perceived state needs.

Special funding would require determination of need, careful planning to assure proper levels and methods of support, and proper implementation by an institution. A decision to undertake special funding should be based on criteria such as appropriateness of method, responsiveness in addressing need, avoidance of unnecessary duplication of effort, cost effectiveness, and consistency with the state's educational goals and philosophy. Special funding, moreover, is not a sound approach for long-term financing. It is, rather, a method for coping with adverse conditions in the short-term. To avoid perpetuation of special funding for programs, sunset provisions would be desirable.

Precedent exists for special support from the state for health science instruction. For many years, the state made deliberate decisions to expand health science programs at the University of Minnesota and to provide special appropriations for medical instruction. State government also was instrumental in establishing and supporting the Mayo Medical School. Beyond this, the state has maintained contracting programs in optometry and osteopathy.

Impact: Coordinating Board staff would be required to examine need for programs and to determine appropriate mechanisms for supporting programs.

3. **The legislature approve the University of Minnesota's request for funds to provide graduate fellowships.**

Rationale: Minnesota benefits from the presence of its strong, research oriented graduate programs. The research undertaken by doctoral students in many fields contributes directly to the health and diversity of the state's economy. Many recipients of Ph.D.s from Minnesota institutions remain in the state to make further contributions. Others enhance the reputation of Minnesota by virtue of their identification with the state.

Major doctoral institutions operate in a highly competitive, national market for the recruitment of talented graduate students. In addition to providing outstanding programs, institutions often need to offer financial inducements to attract talented students who may receive other offers of financial support.

The legislature and governor in recent years have made efforts to strengthen graduate education at the University of Minnesota. So far, much of the focus has been on the quality of the faculty through funding for retention and recruitment of highly regarded faculty members. The state also has provided general, unrestricted operating funds that the University uses for graduate student fellowships. The University is requesting additional appropriations for this purpose. Through provision of special funds for fellowships, the state would continue and extend its commitment through the recruitment of talented students in pursuing state interests.

Impact: Additional appropriations for the University of Minnesota would be necessary to provide fellowships.

4. **That the Board staff immediately begin working with the University of Minnesota to explore assistance for students in the health profes-**

sions in financing their education, and that such exploration focus on targeted grant programs.

Rationale: Tuition rates for advanced study, particularly for several first professional fields, are higher at the University of Minnesota than at many comparable institutions. The University of Minnesota maintains that tuition rates for high-cost advanced programs will rise even higher if it follows its internal guidelines on cost-based tuition for all unit. The result, according to the University, would be tuition rates so high as to be a deterrent and to make the University uncompetitive for the most talented students.

Assistance targeted to specific students is the preferred approach to this problem rather than tuition subsidies for entire programs.

- Projected surpluses of practitioners, not high tuition rates, constitute the greatest threat to professional school enrollments. If prospects for financial reward were attractive, the costs of attendance, of which tuition is only part, would be a worthwhile investment to highly talented individuals who have other career options.

- Assuming lower tuition would induce enrollments in the face of questionable market conditions, the consequence would be preparation of even more practitioners, thereby making the situation worse.

- The University of Minnesota has wide discretion over how it raises the expected tuition revenue to cover one-third of instructional costs. It can adjust tuition rates to meet its own priorities. The University has chosen to move toward application of this one-third expectation in all units, which would raise tuition in high-cost programs. This movement, however, has not been uniform as the University has pursued other guidelines and priorities with regard to tuition. If it chose to do so, the University could make further adjustments for professional programs.

Impact: The state's current tuition policy would remain unchanged. To help alleviate the financial problems encountered by some health professions students, however, the Higher Education Coordinating Board staff would work with University of Minnesota staff to develop possible approaches for targeting grant assistance.

5. **That the Higher Education Coordinating Board explore more creative ways to assist graduate and professional students in financing their education.**

Rationale: The state might be able to provide assistance in assembling financing packages for graduate and professional students who rely on sources of funds other than current income and savings. An example of such assistance is the income-contingent loan repayment program approved by the 1985 Legislature for some categories of professionals who are graduates of institutions that are located in Minnesota. The intent of the program is to provide flexibility in repayment of educational loans, thereby easing the financial burden and risk of pursuing professional education.

Impact: Exploring creative financing methods would require commitment of staff resources by the Coordinating Board.

6. **The post-secondary community explore further issues emerging from this study related to the quantity of graduate and professional education in Minnesota.**

Rationale: In studying the financing of graduate and professional education in Minnesota, other issues related to the amount of advanced study emerged. Among these are:

- Minnesota's "fair share" contribution to the national pool of expertise,
- Minnesota's self-sufficiency in preparing persons with advanced education,

Issues related to mission also have been raised in the Higher Education Advisory Council's Task Force on Mission Differentiation.

Impact: Exploring issues would require commitment of staff resources by the Coordinating Board.

7. **That the Higher Education Coordinating Board, in concert with the post-secondary education community, explore the establishment of guidelines for outcomes of graduate and professional education programs in Minnesota.**

Rationale: Concern over standards in some advanced programs, particularly at the master's level, has arisen nationally. A specific concern is whether the master's degree should simply reflect the accumulation of credit hours or whether it should reflect the attainment of certain levels of knowledge and skills. Clear and generally agreed upon standards for graduate and professional education would provide criteria by which to assess the quality of proposed and existing programs.

Impact: Efforts to establish guidelines would require commitment of staff resources by the Coordinating Board.

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CHAPTER I. INTRODUCTION

Advanced study and related research in critical areas have contributed significantly to the development of Minnesota's resources and human talent. Direct consequences have been new and rejuvenated industries, improved agricultural production, expanded commerce, and improved professional services. These have provided Minnesota with jobs, a productive labor force, a diverse economy, good health care, and an attractive quality of life. Because of its importance to the state's future, leaders in government, education, business, and labor have a stake in the status of advanced study in Minnesota. Vibrant and financially sound graduate and professional education help to improve the state's chances for creativity and growth. The alternative leads to stagnation or decline. Through government policy decisions, Minnesotans can influence the future of advanced education in the state.

Many parties have interests in graduate and professional education. Individuals pursue advanced study for financial, professional, intellectual, and other rewards. Business and industry sponsor it for the knowledge and expertise that directly benefit firms through increased productivity. Governments at various levels support it to implement public policies, to address labor force demands, to promote economic development, and to provide educational opportunities. Each party brings its own perspective to a wide range of policy questions about the quality, quantity, financing, and other issues related to advanced study.

This report focuses on the interests and policies of state government in financing graduate and professional education.[1] In Minnesota, state government plays a major role in supporting advanced study. It appropriates funds for the general operation of public institutions that provide advanced instruction and for specific instructional programs and research projects. Through loan programs, it helps students pay the costs of attending both public and private institutions.

BACKGROUND: REASSESSING GRADUATE AND PROFESSIONAL EDUCATION

Across the nation, as well as in Minnesota, graduate and professional education are being reassessed for several reasons. One issue is how to maintain a capacity for providing balanced, high-quality advanced study while meeting changing patterns of demand. Related issues are how to prepare for anticipated changes in demand and how to maintain an adequate level of accessibility for students in the face of these circumstances. Some areas of advanced study have experienced considerable vitality and expansion in recent years. Others have experienced depressed enrollments and underused resources because positions for persons with advanced degrees exist, but the rewards are not competitive with other careers. More often, depressed demand for persons with advanced degrees is the cause for low enrollments. Projected low demand, at least in the short-term, may lead to low enrollment in yet more fields. This could lead to future shortages if, as anticipated, demand for persons with advanced degrees increases.

In Minnesota, proposed clarifications in mission among the post-secondary systems promise greater commitment of institutional resources to advanced study.

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1. This study is derived from a larger Higher Education Coordinating Board paper, The Financing of Graduate and Professional Education in Minnesota: Staff Technical Paper. Copies are available upon request to the Coordinating Board office.

At the same time, concern has arisen that state financing policies for post-secondary education may impede change. The University of Minnesota, the state's largest provider of graduate and professional instruction, is implementing A Commitment to Focus. Through this plan, the University is placing more emphasis on graduate and professional programs and improvement in its national position as a graduate institution. A Commitment to Focus also has contributed to an examination of mission differentiation among the state's other post-secondary systems to reduce duplication of effort. A major element is a request that state government change its financing policies for post-secondary education to help the University achieve its goals.

The state's current policies for financing post-secondary education were adopted in 1983. Through them, the state determines levels of instructional expenditures for each public post-secondary system based on cost of instruction, level of instruction, and enrollment. Within this framework, the state appropriates funds equal to two-thirds of these expenditures to each public collegiate system and three-fourths to the system of area vocational-technical institutes. Tuition revenue is expected to cover the remainder of instructional expenditures, thereby relating tuition to costs of instruction for the entire system. To help undergraduate students pay their cost of attendance, the state has increased funding for the need-based Scholarship and Grant Program; to help both graduate and undergraduate students, the state created a new loan program. The 1985 Legislature established an income-contingent loan repayment program to help graduates of some advanced programs offered at Minnesota institutions.

MANDATE AND PURPOSE

In 1984, the Higher Education Coordinating Board adopted an initiative to assess the relationship of various state policies for post-secondary education

to graduate and professional education. This report identifies principal financing issues for the Board's advice to state policy makers on matters directly affecting economic development, labor force needs, institutional mission, student access, and quality of education.

The report explores state financing policies by posing three questions:

- o What methods does state government employ to support advanced study?
- o How appropriate are these methods of support for fulfilling the state's interests?
- o Could alternative methods be more effective in pursuit of the state's interests?

Chapters III, IV, and V respond to the first question. Answers to the other questions appear in the conclusion based on material developed in the remainder of the report.

The study does not indicate how much the state should spend or what specific programs or areas of advanced study should receive financial support. Results of the study, however, may help determine the appropriate state role and methods of financing particular types of programs to meet the state's objectives.

APPROACH

Five purposes of graduate and professional education are preparation of knowledge producers, production of knowledge, preparation of first professionals, preparation of graduate professionals, and provision of continuing education. Each purpose has unique characteristics and circumstances that make a uniform approach to advanced education both difficult and undesirable.

Selecting the appropriate method of support for advanced study also is important. Three broad concepts explored are:

- o General, unrestricted financing of institutions that offer graduate or professional education.

- o Financing of specific programs, projects, or activities that are related to advanced study.
- o Financing of students who undertake advanced study.

These approaches are not mutually exclusive. However, the implications of each differ. Providing general support for institutions leaves discretion over specific programs and level of funding for them largely to the institution. Financing of specific programs allows for greater initiatives by the financing source in setting institutional priorities and resource allocations. Financing of students rather than institutions or programs focuses responsibility for educational choices on students and their sources of support.

Sound financing policy involves using the most appropriate method or methods to address a specific purpose of advanced study. Appropriateness depends on the nature of a particular objective and circumstances. This study assesses the applicability of the various financing methods to the challenges facing diverse elements of graduate and professional education in Minnesota.

ORGANIZATION

Following this introduction, Chapter II describes the nature of graduate and professional education and the costs associated with them. Chapter III analyzes the state's financial support for advanced study in Minnesota through the financing of institutions, programs, and students. The development and extent of graduate and professional education in Minnesota are described in Chapter IV. Major developments shaping advanced study nationally are outlined in Chapter V. Conclusions about the appropriateness of state financing policies in view of the nature and conditions of graduate and professional education are presented in Chapter VI.

CHAPTER II. NATURE AND COSTS OF GRADUATE AND PROFESSIONAL EDUCATION

Understanding the nature, diversity, and costs associated with graduate and professional education is necessary to assess the effects of state policy. This chapter discusses the definition, main purposes, nature of degrees conferred, and costs associated with advanced study.

DEFINITION

For this study, graduate and professional education are defined as the formal, systematic study of a subject or field of applied expertise within an institutional setting at a level beyond the baccalaureate degree. This definition includes three distinct attributes: an institutional base, structured and supervised instruction, and use of high-order intellectual skills. An institutional base allows for the assembling of instructional resources, awarding credits and degrees, and fostering contact among faculty and students. Structured and supervised instruction provides the basis for coherent, systematic transmission of knowledge and expertise. High-order intellectual skills used in advanced study include identification and analysis of problems, resolution of problems through acquisition and application of knowledge, independent work, communication of findings to other experts, and critical examination of other work.

PURPOSES OF GRADUATE AND PROFESSIONAL EDUCATION

Graduate and professional education are directed toward one or more of at least five distinct purposes. Significant overlap exists. Knowledge producers engage in systematic inquiry and research to generate new information and to develop new applications of knowledge. Their acquisition of knowledge and

research skills involves a process that is time consuming, highly individualized, and costly. Knowledge is a product of basic and applied research, much of which is performed by graduate students. First professionals refer to experts in fields where costly and lengthy preparation is first available beyond the baccalaureate degree. Examples are attorneys, dentists, physicians, and veterinarians. Graduate professionals are experts in fields where initial preparation occurs at the baccalaureate level such as business administration, education, and nursing. The emphasis in professional fields usually is on practice or applied research rather than creation of knowledge. Continuing education is the enhancement of knowledge and skills for active practitioners.

GRADUATE AND PROFESSIONAL DEGREES

To a large extent, degree titles are related to the particular purposes of advanced study. For knowledge producers, the highest degree is the Doctor of Philosophy (Ph.D.) with the Master of Arts (M.A.) or Master of Science (M.S.) as an intermediate degree. First professionals have initial degrees unique to their fields, such as Doctor of Dental Surgery (D.D.S.) in dentistry or the Doctor of Medicine (M.D.) in allopathic medicine. Study in graduate professional fields may lead to a master's or doctoral degree, typically with the name of the field contained in the degree, such as Master of Business Administration (M.B.A.) and Doctor of Education (Ed.D.).

COSTS

The costs of graduate and professional education include both the costs to institutions of providing instruction and the costs to students of attending an institution. Costs to institutions consist mostly of expenditures for faculty, supplies, and operations, less savings derived from employing students. Costs to graduate and professional students include some that are commonly recognized

in the financial aid community, such as tuition, fees, books, supplies, miscellaneous items directly related to instruction, and living expenses. Important costs of attendance not commonly recognized include research activities, professional activities, repayment of earlier loans, and opportunity costs. Opportunity costs, the lost income from not participating in the labor force, can be large for advanced students who have considerable earning power by virtue of their undergraduate education.

CHAPTER III. FINANCING OF GRADUATE AND PROFESSIONAL EDUCATION IN MINNESOTA

State government in Minnesota finances graduate and professional education in three ways: through unrestricted financing of systems and institutions, financing of specific programs, and financing of students. The methods are discussed in this chapter. References are also made to sources of funds other than the state.

FINANCING OF SYSTEMS AND INSTITUTIONS

General financing of systems and institutions refers to the provision of unrestricted operating funds. Public and private institutions have different patterns of finance. For Minnesota's public systems, the state has adopted specific policies and methods for providing general operating funds.

Sources of Operating Funds

Higher education institutions in Minnesota obtain general operating funds from a variety of sources. Private institutions depend primarily on tuition and fees. Most public universities that offer graduate instruction rely heavily on state appropriations, followed by tuition. The University of Minnesota-Twin Cities, in contrast to other public institutions, has more diverse sources of funds, including substantial amounts from the federal government.

State Financing Policies for Public Collegiate Systems

The state recognizes two categories of general operating expenditures: instructional and non-instructional. Most instructional expenditures are determined through average cost funding, a method that bases authorized expenditures on enrollments and costs by level of instruction. For collegiate systems, the state provides two-thirds of systemwide instructional expenditures through

appropriations and expects the systems to raise the remaining one-third through tuition. Appropriations for non-instructional expenditures and supplemental instructional expenditures are determined by additions or reductions in the previous year's base as need and availability of funds permit.

University of Minnesota Funding and Allocations

Total instructional expenditures at the University of Minnesota in Fiscal Year 1987 amount to over $327 million, virtually unchanged from Fiscal Year 1977 after accounting for inflation. Tuition revenue in 1987 amounts to $111 million, an increase of 27 percent after inflation. State appropriations for instructional and noninstructional purposes total $363 million, an increase of nine percent adjusted for inflation. This amount includes supplemental appropriations for improvements in faculty and in support for graduate students provided by the 1985 Legislature.

Through an internal allocation process that implements system priorities, the University of Minnesota distributes general fund revenues among its various units. In Fiscal Year 1985, the University spent over $111 million, more than one-third of its instructional funds provided by the state, on graduate and professional instruction. Although declines occurred in non-inflated expenditures for advanced instruction in recent years, increases occurred in some first professional fields, such as medicine and veterinary medicine.

Resident tuition rates for graduate students at the University in Fiscal Year 1987 range from $2,397 per year for most students to $7,000 in a business administration program. Variation also exists in first professional programs. Resident tuition in law, for example, is $2,938 per year while in dentistry it is $5,029. In general, resident tuition in graduate and professional schools at the University of Minnesota ranks high compared to other public universities.

Although tuition revenue amounts to 33 percent of instructional costs systemwide, percentages vary by unit. In effect, instructional units with higher percentages subsidize those with lower percentages. The University of Minnesota tuition guidelines call for movement by all units toward the systemwide percentage. The University, however, appears not to have applied strictly this principle. Market forces appear to be a significant factor in setting tuition for individual programs, particularly at the graduate level.

State University System Funding and Allocations

Total instructional expenditures in the State University System in Fiscal Year 1987 amount to nearly $175 million. After inflation, this is 13 percent higher in total but 2 percent lower per student than in Fiscal Year 1977. Tuition revenue is $61 million, an increase of 78 percent after inflation. State appropriations for instructional and noninstructional expenditures are $118 million, a decrease of 9 percent after inflation.

Through a defined allocation procedure, the system office distributes general fund revenues among its various campuses. In Fiscal Year 1985, the system spent over $10 million on graduate instruction. This was about seven percent of instructional funds provided by the state.

Tuition for full-time resident graduate students is $1,226 in Fiscal Year 1987. This places Minnesota's state universities toward the middle in ranking among comparable institutions nationally. Tuition revenue as a percentage of instructional costs for graduate instruction was slightly less than the systemwide percentage as of Fiscal Year 1985.

Possible Impacts of Funding and Tuition Policies

Instructional expenditures under the state's average cost funding method and its tuition policy are sensitive to changes in enrollment. Simulations

indicate that, without adjustment in policy, projected enrollments at the University of Minnesota could result in an overall decrease of five percent in instructional expenditures adjusted for inflation by Fiscal Year 1991. Tuition revenue per full-time equivalent student could rise four percent in constant dollars. Expenditures for graduate instruction could increase 37 percent, while decreases in expenditures for professional and undergraduate instruction could be 11 percent each. In the State University System, overall instructional expenditures adjusted for inflation could decrease five percent while tuition revenue per full-year equivalent student could increase six percent. Expenditures for graduate instruction could increase 15 percent but decrease 6 percent for undergraduate instruction.

FINANCING OF PROGRAMS RELATED TO ADVANCED STUDY

Financing of programs is accomplished by dedicating funds to a specific institutional program or research project. Program financing is a means for the sponsoring body to pursue its objectives and priorities. Sponsorship of research is important for graduate education because many graduate students are employed as research assistants. Sources of program funding in Minnesota include state government, the federal government, private industry, and non-profit institutions.

State government provides special funding for advanced instruction and research in a variety of ways, such as special appropriations for specific research and instruction. In Fiscal Year 1985, the University of Minnesota received $19 million in special state appropriations for research. Since 1971, the state has provided capitation grants, a certain amount of money per student, to the Mayo Medical School for each Minnesota resident enrolled. Another

example is the contracting for student positions at optometry and osteopathy institutions outside Minnesota for state residents.

FINANCING OF GRADUATE AND PROFESSIONAL STUDENTS

The financing of students involves raising funds to pay a student's costs of attendance. The following is a review of financing sources, costs of attendance in Minnesota, patterns of graduate and professional student financing in Minnesota, and the state's current financial aid policies. Because of its extensive graduate and professional enrollments, the University of Minnesota-Twin Cities is used as the benchmark for student financing.

Categories of Financing Sources

Sources for the financing of students fall essentially into two categories: income of students and grants from other sources. Income may have three forms: savings from past earnings, earnings from current employment, and earnings from future employment to repay loans. Grants are nonrepayable sources of funds such as fellowships that often provide incentives to students to pursue education. While national data suggest that loans, or future income, are the largest source of student financing, data from Minnesota suggest that current income may be the largest source of financial support.

Costs of Attendance

Commonly recognized costs of attendance for the average graduate student at the University of Minnesota in 1984-85 totaled approximately $22,600. For the average first professional student, the amount was about $19,800. Tuition and fees constituted about 20 percent for professional students and 9 percent for graduate students. By far, the largest cost was living expenses, as seen in Table 1. If costs not commonly recognized as costs of attendance, such as loan

TABLE 1. MEAN LEVEL OF EXPENSES FOR GRADUATE, LAW, AND HEALTH SCIENCE STUDENTS AT THE UNIVERSITY OF MINNESOTA, 1984-85

Category	Graduate School		Law School		Health Sciences Schools	
	Mean	Percent[1]	Mean	Percent[1]	Mean	Percent[1]
Educational Expenses						
Tuition and Fees	$ 2,126	9%	$ 3,656	19%	$ 4,470	22%
Supplies, Other Fees	269	1	423	2	394	2
Subtotal: Educational Expenses	$ 2,395	11%	$ 4,079	21%	$ 4,864	24%
Living Expenses	$20,252	89%	$15,681	79%	$15,011	76%
TOTAL EXPENSES	$22,647	100%	$19,760	100%	$19,875	100%

SOURCE: Melissa Anderson, "A Survey of the Finances of Students Enrolled in the University of Minnesota Graduate and Professional Schools" (University of Minnesota, September 1986).

[1]Percentages may not add to 100 due to rounding.

repayments and opportunity costs, were added, the total costs of attendance would be much higher.

Resources Available to Cover Costs

Graduate and professional students, on average, had available between $19,000 and $27,000 to cover their costs of attendance in 1984-85. Current income, including earnings by spouses, was the largest single source, just over 75 percent for graduate students and just under 50 percent for professional students. Loans based on anticipated income were a considerable source of funds annually for professional students, as shown in Table 2. These data may not fully account for a trend at many institutions to offer programs directed at students who attend part-time while paying for their education through earnings from their full-time jobs.

Patterns of Financing

Patterns of student financing reflect the situation of students, the requirements or current structure of educational programs, and the availability of funds. Professional students are more likely to rely on loans rather than current income because they are more likely to attend full-time, less likely to have time or opportunities for employment, and less likely to be married. They also may perceive that future income will be great enough to allow repayment of a large debt. In contrast, graduate students are more likely to rely on current income because they are more likely to attend part-time, more likely to have time and opportunities for employment, and more likely to be married. They may avoid loans because they perceive that future income will not be great enough to allow repayment of a large debt.

TABLE 2. MEAN LEVEL OF FUNDS BY SOURCE AMONG GRADUATE, LAW, AND HEALTH SCIENCE STUDENTS AT THE UNIVERSITY OF MINNESOTA, 1984-85

Category	Graduate School Students		Law School Students		Health Sciences Schools Students	
	Mean	Percent[1]	Mean	Percent[1]	Mean	Percent[1]
Past Income						
Interest Income	$ 567	2%	$ 214	1%	$ 202	1%
Savings	314	1	1,786	9	1,067	6
Total Past Income	$ 881	3%	$ 2,000	10%	$ 1,269	7%
Current Income						
Own Earnings	$ 8,052	30%	$ 3,310	17%	$ 1,813	10%
Spouse Support	12,493	47	6,334	32	6,689	35
Total Current Income	$20,545	77%	$ 9,644	48%	$ 8,502	45%
Future Income						
Educational Loans	$ 1,341	5%	$ 3,593	18%	$ 5,823	31%
Other Loans	200	1	1,214	6	853	4
Total Future Income	$ 1,541	6%	$ 4,807	24%	$ 6,676	35%
Gifts and Grants						
Grants	$ 2,141	8%	$ 143	1%	$ 1,226	6%
Other Support[2]	1,028	4	309	2	323	2
Total Gifts and Grants	$ 3,169	12%	$ 452	2%	$ 1,549	8%
Family Support	$ 650	2%	$ 3,036	15%	$ 1,029	5%
TOTAL	$26,786	100%	$19,939	100%	$19,025	100%

SOURCE: Melissa Anderson, "A Survey of the Finances of Students Enrolled in the University of Minnesota Graduate and Professional Schools" (University of Minnesota, September 1986).

[1] Percentages may not add to 100 due to rounding.
[2] Other support is not necessarily limited to gifts and grants. It was a miscellaneous category in the survey.

Current Financial Aid Policies and Practices

The state treats graduate and professional students differently from undergraduate students in financial aid. Undergraduates who reside and attend an institution in Minnesota are eligible for a need-based state scholarship or grant. For advanced students, the state limits aid almost exclusively to loans. Several state funded loan programs are available, including a recently established income contingent loan repayment program for graduates of programs in dentistry, medicine, pharmacy, and veterinary medicine at Minnesota institutions.

The federal government is a major provider of grants, loans, and, through research projects, employment for graduate and professional students. Higher education institutions also provide support.

CHAPTER IV. GRADUATE AND PROFESSIONAL EDUCATION IN MINNESOTA

Background on several topics provides perspective on financing graduate and professional education in Minnesota. This chapter examines the history, state interests, array of institutions, range of degree programs, trends in enrollments, and trends in degrees conferred.

HISTORY

Graduate and professional education in Minnesota date back to at least 1880. Since the beginning of the 1900s, the University of Minnesota has been the leading provider of advanced instruction. By the late 1880s, less than 20 years after it began continuous operation, the University conferred its first earned Ph.D. At about the same time, the University assumed a predominant role in Minnesota in preparing professionals, especially in the health sciences. The University of Minnesota has become one of the major centers for advanced study and research nationally.

Major efforts by the State University System and Minnesota's private institutions to provide advanced instruction are more recent. In the early 1950s, the then state colleges received statutory approval to confer master's degrees. Initially, offerings were limited to teacher education, but later expanded to the point where the issue of state universities conferring doctoral degrees has emerged. Most of the growth in graduate study at private institutions has occurred since 1970. Private professional schools of law and chiropractic have existed for a much longer time, while the Mayo Medical School opened in 1971.

STATE INTERESTS

State government has a variety of interests in graduate and professional education. Research conducted at the University of Minnesota, such as the development of the process for extracting iron from taconite, has made major contributions to the state's economic vitality. Graduates of professional schools in Minnesota provide essential services. To promote an adequate supply of professionals such as physicians, the state has given direct financial support to programs at public and private institutions. As a service to Minnesota residents, state government also provides opportunities for advanced study.

INSTITUTIONS WITH GRADUATE AND PROFESSIONAL PROGRAMS

Minnesota has 25 institutions that provide graduate and professional instruction leading to degrees. As shown in Table 3, these include 6 state universities, 2 campuses of the University of Minnesota, 10 private colleges, and 7 private professional schools. They offer 607 advanced degree programs. Of these, 14 are at the first professional level, 428 at the master's level, 139 at the doctoral level, and 26 in specialist programs between the master's and doctoral levels. The University of Minnesota offers the widest range of programs with 372 at all levels, followed by the State University System with 141 master's and specialist programs, the private colleges with 71 programs at all levels, and private professional schools with 23 programs.

ENROLLMENT

In fall 1985, Minnesota's institutions of higher education enrolled 24,558 graduate and first professional students. This was 9 percent of the state's reported post-secondary enrollment, as shown in Table 4. The University of Minnesota accounted for over 50 percent of these students, followed by the

TABLE 3. INSTITUTIONS IN MINNESOTA OFFERING GRADUATE AND PROFESSIONAL PROGRAMS

Institutions	Graduate[1]		First Professional
	Master's	Doctoral	
Public			
State University System			
Bemidji	X		
Mankato	X		
Metropolitan	X		
Moorhead	X		
St. Cloud	X		
Winona	X		
University of Minnesota[2]			
Duluth	X		X[3]
Twin Cities	X	X	X
Private			
Colleges and Universities			
Augsburg College	X		
College of St. Catherine	X		
College of St. Scholastica	X		
College of St. Thomas	X		
Hamline University	X		X
Kotz Graduate School of Business	X		
Mayo Graduate School of Medicine	X	X	
St. John's University	X		X
St. Mary's College[4]	X		
Walden University		X	
Professional Schools			
Bethel Seminary	X	X	X
Luther Northwestern Theological Seminary	X	X	X
Mayo Medical School			X
Northwestern School of Chiropractic			X
St. Paul Seminary	X		X
United Theological Seminary	X	X	X
William Mitchell College of Law			X

SOURCE: Minnesota Higher Education Coordinating Board.

[1]Includes graduate professional study and graduate study beyond first professional degrees.
[2]The University of Minnesota-Morris has offered graduate level courses through Continuing Education and Extension.
[3]First two years only of medical program leading to M.D. degree.
[4]Graduate programs offered through extension only.

TABLE 4. RELATIONSHIP OF GRADUATE AND PROFESSIONAL HEADCOUNT ENROLLMENT TO TOTAL HEADCOUNT ENROLLMENT AT INSTITUTIONS IN MINNESOTA, FALL 1985

Institution	Graduate and First Professional	Total All Levels	Percent Graduate and First Professional
Public			
State University System			
Bemidji	278	4,277	6%
Mankato	2,103	14,225	15
Metropolitan	100	3,892	3
Moorhead	99	6,048	2
St. Cloud	1,021	12,279	8
Winona	519	5,326	10
Other	0	2,458	0
System - All Campuses	4,120	48,505	9%
University of Minnesota[1]			
Duluth	536	12,288	4
Twin Cities	12,233	63,150	19
Other	0	4,041	0
System - All Campuses	12,769	79,479	16%
Community College System - Total	0	39,264	0%
Public Collegiate Total - All Institutions	16,889	167,248	10%
Private			
Colleges and Universities			
College of St. Catherine	148	2,481	6%
College of St. Scholastica	65	1,449	4
College of St. Thomas	2,445	6,774	36
Hamline University	685	1,863	37
Kotz Graduate School of Business	-	-	-
Mayo Graduate School of Medicine	987	987	100
St. John's University	100	1,934	5
St. Mary's College	349	1,550	23
Walden University	39	39	100
Other	0	22,420	0
Colleges and Universities - All Institutions	4,818	39,497	12%

CONTINUED

TABLE 4. RELATIONSHIP OF GRADUATE AND PROFESSIONAL HEADCOUNT ENROLLMENT TO TOTAL HEADCOUNT ENROLLMENT AT INSTITUTIONS IN MINNESOTA, FALL 1985 CONTINUED

Institution	Graduate and First Professional	Total All Levels	Percent Graduate and First Professional
Professional Schools			
Bethel Seminary	492	497	99%
Luther Northwestern Theological Seminary	264	666	40
Mayo Medical School	154	154	100
Northwestern School of Chiropractic	557	557	100
St. Paul Seminary	77	87	89
United Theological Seminary	203	203	100
William Mitchell College of Law	1,104	1,104	100
Professional School Total	2,851	3,268	87%
Two-Year Colleges Total - Total	0	956	0%
Private Collegiate and Professional Total	7,669	43,721	18%
State Collegiate and Professional Total	24,558	210,969	12%
Public and Private Vocational Schools - Total	0	50,299	0%
STATE POST-SECONDARY TOTAL	24,558	261,268	9%

SOURCE: Minnesota Higher Education Coordinating Board.

[1]Includes enrollments in Continuing Education and Extension.

private colleges, the State University System, and the private professional schools.

A characteristic of graduate and professional enrollment in Minnesota is the preponderance of permanent state residents reported by institutions at the master's and professional levels compared to the preponderance of non-residents at the doctoral level. Over 70 percent of master's and first professional students enrolled in each system in 1985-86 were classified as Minnesota residents while over 50 percent of doctoral students at the University of Minnesota were classified as non-residents.

DEGREES CONFERRED

In 1984-85, Minnesota institutions conferred 5,634 graduate and first professional degrees. The University of Minnesota conferred nearly 60 percent of these, followed by the private institutions with 30 percent, and the state universities with 10 percent. Between 1972-73 and 1984-85, the number of degrees conferred increased by 35 percent, as shown in Table 5. During this period, private institutions assumed a greater role in advanced education, replacing the state universities as the second greatest source of advanced degrees. Increases occurred in master's and first professional degrees conferred, while the number of doctoral degrees conferred remained fairly stable. About 50 percent of master's degrees conferred were in business and education. Education also accounted for the largest number of doctoral degrees, while the largest number of first professional degrees was in law.

NATIONAL COMPARISONS IN DEGREES CONFERRED

Minnesota and the nation experienced overall growth in advanced degrees conferred between 1972-73 and 1982-83. The growth rate in Minnesota, however, was nearly double the national rate. Variations did occur, however, by level of

TABLE 5. GRADUATE AND FIRST PROFESSIONAL DEGREES CONFERRED IN MINNESOTA BY SECTOR, 1972-73 AND 1984-85

	Number Conferred 1972-73[1] (Percent of Total)	Number Conferred 1984-85 (Percent of Total)	Percent Change
Public Sector			
University of Minnesota	2,603 (63%)	3,298 (59%)	27%
State Universities	1,004 (24%)	635 (11%)	-37%
Public Sector Total	3,607 (87%)	3,933 (70%)	9%
Private Sector Total	556 (13%)	1,701 (30%)	206%
TOTAL GRADUATE AND FIRST PROFESSIONAL DEGREES CONFERRED	4,163 (100%)	5,634 (100%)	35%

SOURCE: HEGIS.

[1]Northwestern School of Chiropractic not included; Mayo Graduate School of Medicine included with the University of Minnesota.

degree. Compared to national rates of increase, Minnesota had nearly triple the growth in master's degrees and nearly double the growth in first professional degrees. In contrast, the number of doctorates declined nationally, with Minnesota's rate of decline more than double the national rate. While Minnesota had 1.8 percent of the population in 1982-83, its output in master's degrees was 1.2 percent, in doctorates 1.5 percent, and in professional degrees 2.2 percent of the national total.

CHAPTER V. IMPORTANCE OF GRADUATE AND PROFESSIONAL EDUCATION IN THE UNITED STATES

Graduate and professional education have important roles in national affairs. This chapter describes the development of graduate and professional education, the contemporary role of advanced study, the responsibility of different parties in providing financial support, and national market conditions.

THE EMERGENCE OF GRADUATE AND PROFESSIONAL EDUCATION

From colonial origins, graduate study, with an emphasis on individual research and scholarship, took root in the latter half of the 1800s. It grew from three distinct sources: the English undergraduate college, which provided an institutional base; the German research institute, which promoted unrestrained research by individuals; and the American concept of knowledge and research as a public investment embodied in the land grant university. Land grant universities became an important vehicle for the growth of graduate education. Since 1950, graduate education has changed dramatically. Following two decades of growth, retrenchment occurred in the early 1970s. For the past decade, graduate education has been shifting into new areas of service.

Professional education as it exists today largely reflects the movement in the early 1900s to develop higher standards of preparation and practice. Starting in medicine, reforms spread to other fields such as dentistry and law. Over the years, study at the graduate level has become common in many other professions.

CONTEMPORARY ROLE OF ADVANCED STUDY

Graduate and professional education serve many constituencies. Students, educational institutions, industry, government, and society benefit from advanced study. Advantages include personal career opportunities and income, technological change and economic development, and physical, social, and cultural well-being of society.

Students are the primary beneficiaries of advanced study through the income and personal satisfaction that preparation for careers yields. Educational institutions benefit from the presence of graduate students who serve as a source of dedicated labor and of intellectual stimulation to faculty and undergraduates. Business and industry rely on specialists with advanced education and the knowledge that these persons produce to solve problems and to compete with domestic and foreign rivals. Federal and state governments also employ experts and apply knowledge. In addition, they support graduate and professional education to provide access to educational opportunity for individuals, to promote preparation of experts and creation of knowledge when market forces alone would not, and to promote economic and other forms of development. Society generally benefits from the services and goods that persons with advanced education provide.

CURRENT FINANCING ROLES AND RESPONSIBILITIES

Because of enhanced earning power and job satisfaction, students have a strong incentive to invest in advanced study. Savings, current income, and loans are the three sources of financing which students may use. Availability of savings depends on past employment while current income depends on opportunities for present employment. Use of loans involves the risk that future income will be enhanced enough at least to cover the cost of loans.

The federal government supports graduate and professional education to further national policies in areas such as health and national security. It is the source of most fellowships, grants, and loans for students pursuing advanced study in the United States. The federal government also is a major source of grants and contracts for specific instructional programs and research projects. Little federal money is directed toward unrestricted institutional operations.

State governments, like the federal government, support graduate and professional education in pursuit of public policies. The basic method of support in many states is unrestricted funds for institutional operations, though states also provide restricted funds for specific programs. States also help finance students directly through loans and grants and indirectly through support of institutions, resulting in reduced need for tuition revenue.

Educational institutions, private businesses, and private foundations also provide various forms of support.

NATIONAL MARKET CONDITIONS

Market conditions affect demand for instruction, expertise, and knowledge generated by advanced study. A surplus of experts, for example, may drive down the price of expertise, thereby reducing incentives for persons to seek preparation for a career. The following section summarizes conditions for knowledge producers, knowledge, first professionals, graduate professionals, and continuing education.

Knowledge Producers and Research

Unfavorable prospects for academic employment since the early 1970s have deterred individuals from pursuing the Ph.D. in many fields such as the humanities. Surpluses of Ph.D.s in the 1970s, however, may turn into shortages in the late 1990s. Although demand may fluctuate, the four to seven years or

more required to prepare new Ph.D.s make adjustment to changed market conditions a lengthy process. Accumulation of resources for high-quality programs to prepare Ph.D.s may take even longer. In addition, the market for Ph.D.s tends to be national or international in extent. Beyond this, the market for knowledge and research is difficult to gauge, especially since many knowledge producers are in places other than universities.

First Professionals

Until recently, expansion characterized the market for first professionals. Evidence now suggests that the market for some first professionals is becoming saturated, especially in the health sciences. While experience over the past two decades indicates that institutions can respond rapidly to expanding markets, responsiveness to contraction has yet to be demonstrated. The possibility of contraction has raised concern that professional schools might relax standards in order to avoid declining enrollments.

The geographic extent of the market for first professionals is unclear. Many professional schools recruit their students and place their graduates nationally, while others define their mission more narrowly to serve state and local demand for student access and practicing professionals.

Graduate Professionals

In terms of degrees conferred, graduate professional education is the largest sector of advanced study. Its diversity and its overlap with other sectors, however, make the market for graduate professionals difficult to delineate and measure. Most programs are at the master's level. Compared to doctoral studies, study at the master's level commonly involves shorter completion time for students and less intensive commitment of resources for institutions. Consequently, programs may be relatively easy to start or expand in

response to demand. Available data indicate that graduate professional education generally has a strong orientation to local markets.

Continuing Education

Continuing education comprises the most amorphous sector of graduate and professional education. Some of it occurs under the auspices of higher education institutions, but much occurs through providers outside higher education. Requirements for continuing education of professionals in many states are a significant impetus for educational activity. Its large, growing, and competitive market needs further assessment.

CHAPTER VI. CONCLUSIONS

While issues directly related to the financing of graduate and professional education in Minnesota emerge from this study, other issues have become apparent. Some of these others, which are briefly sketched, could be the subjects of future studies.

GENERAL FINANCING ISSUES AND ALTERNATIVES

As an alternative to the unrestricted financing of institutions, the state could treat graduate and professional education differently from undergraduate education. Funding levels for graduate and professional instruction could be dedicated to specific levels of instruction. Further, funding for advanced instruction could be determined in a different manner from undergraduate instruction. This could reduce the stress on institutions in allocating resources to high cost, low enrollment programs at the expense of other activities. In addition, the expectation that tuition revenue cover one-third of instructional costs could be modified to reduce the financial requirements for graduate and professional students. Benefits from such changes could be more stable funding for advanced instruction and lower tuition rates for graduate and professional students.

Such changes in institutional funding policies, however, could have several negative consequences. First, erosion of autonomy through restrictions on the use of funds could limit institutional responsiveness. Institutions and their governing boards now have the autonomy to allocate funds in response to demand for instruction and other services. Second, while graduate and professional education are distinct from undergraduate education, separation is difficult for both academic, staffing, and budgetary purposes. Unrestricted, general support

enables institutions to maintain integration of the educational enterprise. With regard to tuition, authority to set tuition rates rests with the governing boards as part of their autonomy. Beyond this, total costs of attendance, market conditions, and program quality facing potential graduate and professional students appear to be more important factors affecting student decisions than tuition alone.

Expansion of program financing for graduate and professional education is another avenue that the state could pursue. State financing of specific programs can be valuable when its use is limited to clearly defined objectives in response to identified circumstances. Program financing enables the state to establish and pursue specific priorities. Through mechanisms such as direct grants, contracting, and funding to sustain programs with low or controlled enrollments, the state can promote activities that educational institutions would not likely undertake by themselves.

Program financing has potential drawbacks that may temper decisions to use it extensively. It can become a form of state intervention to force or induce institutions to engage in activities that are not in their broader interests or missions. Without clearly defined purpose, it can lead to misdirected resources or unwelcome results. Program funding is subject to manipulation by institutions to attract special support for highly visible programs, thereby releasing general funds for other activities. Program financing also is risky for an institution because restricted state funding can be highly volatile in the short term. It lacks the long-term reliability and commitment essential for building and sustaining quality.

A major change in state policy would be the establishment of state-funded fellowships and other grants for graduate and professional students. Merit-based grants could attract highly qualified individuals to specific programs or

institutions. State grants could be effective in providing direct, immediate incentives for individuals to pursue specific areas of study that serve the state's interests or to attend certain institutions. Institutions and other providers use fellowships and other grants to meet their own goals as well as to help students. Grants could be an incentive to overcome unfavorable, short-term market conditions where uncertain prospects for income make advanced study unattractive to students. These uncertainties would be magnified in fields with long preparation and high costs. Considering these factors, state grants may be an appropriate means of supporting graduate and professional students.

Need-based grants, similar to those available to undergraduates, could reduce financial barriers to further studies. Such grants, however, would help the neediest individuals, not necessarily the most talented. Provision of a need-based program would be expensive. It also would require the development of new criteria to determine need due to different requirements and lifestyles of older individuals pursuing graduate and professional education.

For students who must borrow money, the possibility of accumulating a large debt may be a deterrent to pursuing advanced studies. Reliance on loans for graduate and professional students involves the risk that advanced study will enhance the earning power to individuals, thereby enabling them to pay debts incurred for their education. The state could help overcome this risk through creative financing programs. An income contingent loan repayment program already operating in Minnesota enables graduates of some professional programs in the state to restructure their debt, if their ability to repay is limited. As experience from this financing method is gained, consideration could be given to expanding the program to students in other fields. At the same time, other creative financing methods could be explored.

SPECIFIC FINANCING ISSUES AND ALTERNATIVES

Maintaining sufficient enrollment of talented Ph.D. candidates in Minnesota is one of two specific issues related to state financing policies. Institutions in Minnesota compete nationally for outstanding students who can generate knowledge to increase the productivity of state industries. A single state may have little effect on national market conditions. Minnesota, however, can enhance the competitiveness of its institutions by means such as improving the quality of the faculty, reducing tuition, and providing grants to recruit students. The first is underway through the appropriation of funds for the retention and recruitment of outstanding faculty at the University of Minnesota. Reduction in tuition may not be effective because tuition is only a portion of a student's cost of attendance and because reduced tuition would be applied generally rather than targeted to talented individuals. Grants, on the other hand, could be targeted.

Projected surpluses of practitioners in some first professional fields such as dentistry is the second issue. If these projections result in fewer qualified applicants to professional schools, institutions could face a dilemma. Without additional financial support, they could seek to maintain enrollments by reducing academic standards and quality in professional programs. Alternatively, they could sustain professional programs by siphoning resources from other units, thereby diminishing quality elsewhere. State action either to reduce tuition or to provide grants may not be able to attract able students under unfavorable market conditions. The local orientation of Minnesota's professional schools, moreover, may make national recruitment difficult. More than two-thirds of professional students in Minnesota are state residents. One remaining option would be for the state to provide special funding to sustain

professional programs whose enrollments fall below the critical mass necessary for generating adequate financial support.

NON-FINANCING ISSUES

Roles of post-secondary institutions in graduate and professional education are dynamic. Historically, graduate and professional education in Minnesota was centered at the University of Minnesota-Twin Cities. The state universities, which have expanded the scope of their graduate programs over the past few decades, have limited their offerings to the master's level, though a desire to proceed to the doctorate level surfaced. The private institutions also have moved aggressively into graduate and professional education. Recent efforts have been made to differentiate the missions of the state's post-secondary education systems in graduate and professional education. Further reassessments likely will occur as circumstances change.

In addition to institutional roles within Minnesota, the issue of graduate and professional education in the national context also deserves consideration. Important elements of advanced study and related research activities have a pronounced national character, significantly so at the doctoral level and less so at the master's level. Factors involved are accessibility of programs, market demand, the degree of specialization within disciplines, and the ability of individual states to maintain self-contained markets for expertise. States and regions, however, tend to complement each other, as highly qualified experts tend to be geographically mobile. The pertinent question is whether state government should plan Minnesota's "fair share" in producing expertise for the nation or limit its consideration solely to state needs while leaving national considerations to institutions.

Despite a wide range of programs and substantial enrollments, advanced degrees conferred in Minnesota are not in balance nationally. While Minnesota had 1.8 percent of the population of the United States in 1982-83, its output in master's degrees was 1.2 percent, in doctorates 1.5 percent, and in professional degrees 2.2 percent. Trends between 1973 and 1983 provide yet another perspective. Master's degrees conferred in Minnesota increased 28 percent in contrast to 10 percent nationally. First professional degrees conferred increased 84 percent in Minnesota, in contrast to 46 percent nationally. However, while Ph.D.s conferred declined 5 percent nationally, they declined 13 percent in Minnesota. These statistics could lead to different conclusions: that Minnesota is a net importer of graduate but not of professional expertise, that Minnesota residents have inadequate access to graduate education, or that Minnesotans find more favorable education opportunities out-of-state.

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